

WHAT IS CLAIMED IS:

1. A hydraulic brake apparatus for a vehicle comprising:

    a pressure source for generating hydraulic pressure;

    a pressure regulating valve for regulating the hydraulic pressure generated by said pressure source in response to braking operation by a vehicle driver;

    a master cylinder for introducing the hydraulic pressure from said pressure regulating valve into a pressure chamber, and advancing a master piston by the hydraulic pressure in said pressure chamber to discharge hydraulic braking pressure from a master chamber;

    a wheel brake cylinder operatively mounted on each wheel of said vehicle for applying braking force to said wheel with the hydraulic braking pressure discharged from said master cylinder; and

    pressure supply means for supplying the hydraulic pressure from said pressure chamber into a hydraulic pressure circuit including said master cylinder and said wheel brake cylinder, when the hydraulic braking pressure discharged from said master cylinder is equal to or greater than a first predetermined pressure, and/or when the hydraulic pressure in said pressure chamber is equal to or greater than a second predetermined pressure.

2. A hydraulic brake apparatus as set forth in claim 1, wherein the first predetermined pressure is set to be equal

to the second predetermined pressure.

3. A hydraulic brake apparatus as set forth in claim 1, wherein said pressure supply means includes a switching valve with one port thereof connected to said pressure chamber, and the other one port connected to a passage between said master cylinder and said wheel brake cylinder, and wherein said switching valve is opened, when the hydraulic pressure is supplied from said pressure chamber into said hydraulic pressure circuit.

4. A hydraulic brake apparatus as set forth in claim 1, wherein said pressure supply means begins to supply the hydraulic pressure from said pressure chamber into said hydraulic pressure circuit, when the hydraulic braking pressure discharged from said master cylinder is equal to or greater than the first predetermined pressure, and/or when the hydraulic pressure in said pressure chamber is equal to or greater than the second predetermined pressure, and said pressure supply means terminates supplying the hydraulic pressure from said pressure chamber into said hydraulic pressure circuit, when the hydraulic braking pressure discharged from said master cylinder and/or the hydraulic pressure in said pressure chamber is equal to or lower than a third predetermined pressure.

5. A hydraulic brake apparatus as set forth in claim 4, wherein the third predetermined pressure is set to be zero.

6. A hydraulic brake apparatus as set forth in claim 1, further comprising pressure detecting means for detecting at

least one of the hydraulic braking pressure discharged from said master cylinder and the hydraulic pressure in said pressure chamber, and wherein said pressure supply means controls the hydraulic pressure in said pressure chamber supplied into said hydraulic pressure circuit, on the basis of the pressure detected by said pressure detecting means.

7. A hydraulic brake apparatus as set forth in claim 1, wherein said pressure supply means begins to supply the hydraulic pressure from said pressure chamber into said hydraulic pressure circuit, when the hydraulic braking pressure discharged from said master cylinder is equal to or greater than the first predetermined pressure, and/or when the hydraulic pressure in said pressure chamber is equal to or greater than the second predetermined pressure, and terminates supplying the hydraulic pressure from said pressure chamber into said hydraulic pressure circuit, when a predetermined time has elapsed from the beginning of supplying the hydraulic pressure from said pressure chamber into said hydraulic pressure circuit.

8. A hydraulic brake apparatus as set forth in claim 7, wherein the first predetermined pressure is set to be equal to the second predetermined pressure.

9. A hydraulic brake apparatus as set forth in claim 7, wherein said pressure supply means includes a switching valve with one port thereof connected to said pressure chamber, and the other one port connected to a passage between said master cylinder and said wheel brake cylinder,

and wherein said switching valve is opened, when the hydraulic pressure is supplied from said pressure chamber into said hydraulic pressure circuit.

10. A hydraulic brake apparatus as set forth in claim 7, further comprising pressure detecting means for detecting at least one of the hydraulic braking pressure discharged from said master cylinder and the hydraulic pressure in said pressure chamber, and wherein said pressure supply means controls the hydraulic pressure in said pressure chamber supplied into said hydraulic pressure circuit, on the basis of the pressure detected by said pressure detecting means.

11. A hydraulic brake apparatus as set forth in claim 1, further comprising a normally open first switching valve with one port thereof connected to a reservoir for storing brake fluid fed to said master cylinder and the other one port connected to said master chamber, wherein said pressure supply means includes a normally closed second switching valve with one port thereof connected to said pressure chamber and the other one port connected to a passage between said first switching valve and said master chamber, and wherein said first switching valve is closed and said second switching valve is opened, when the hydraulic pressure is supplied from said pressure chamber into said hydraulic pressure circuit.

12. A hydraulic brake apparatus as set forth in claim 11, wherein said pressure supply means begins to supply the hydraulic pressure from said pressure chamber into said

hydraulic pressure circuit, when the hydraulic braking pressure discharged from said master cylinder is equal to or greater than the first predetermined pressure, and said pressure supply means terminates supplying the hydraulic pressure from said pressure chamber into said hydraulic pressure circuit, when the hydraulic braking pressure discharged from said master cylinder and/or the hydraulic pressure in said pressure chamber is equal to or lower than a third predetermined pressure.

13. A hydraulic brake apparatus as set forth in claim 12, wherein the third predetermined pressure is set to be zero.

14. A hydraulic brake apparatus as set forth in claim 11, wherein said pressure supply means begins to supply the hydraulic pressure from said pressure chamber into said hydraulic pressure circuit, when the hydraulic braking pressure discharged from said master cylinder is equal to or greater than the first predetermined pressure, and terminates supplying the hydraulic pressure from said pressure chamber into said hydraulic pressure circuit, when a predetermined time has elapsed from the beginning of supplying the hydraulic pressure from said pressure chamber into said hydraulic pressure circuit.

15. A hydraulic brake apparatus as set forth in claim 11, further comprising pressure detecting means for detecting at least the hydraulic braking pressure discharged from said master cylinder, and wherein said pressure supply

means controls the hydraulic pressure in said pressure chamber supplied into said hydraulic pressure circuit, on the basis of the pressure detected by said pressure detecting means.